<u>CLAIMS</u>

What is claimed is:

1   1. A method for generating a linearized amplified output signal from an input signal having

2 amplitude information, the method comprising:

3   converting the input signal into two pre-distorted signals without amplitude information;

4   separately amplifying the two pre-distorted signals; and

5   combining the two amplified, pre-distorted signals to generate the linearized amplified output signal.

1   2. The invention of claim 1, wherein:

2   the input signal is an RF signal; and

3   the linearized amplified output signal is an RF signal having amplitude information.

1   3. The invention of claim 1, wherein converting the input signal comprises:

2   pre-distorting the input signal to generate a pre-distorted input signal; and

3   converting the pre-distorted input signal into the two pre-distorted signals without amplitude

4 information.

1   4. The invention of claim 3, wherein pre-distorting the input signal comprises pre-distorting both

2 amplitude and phase of the input signal.

1   5. The invention of claim 1, wherein converting the input signal comprises:

2   generating a phase pre-distortion term from the input signal;

3   generating an amplitude pre-distortion term from the input signal;

4   detecting phase of the input signal;

5   combining the phase pre-distortion term, the amplitude pre-distortion term, and the phase in a first

6 manner and modulating at a carrier frequency to generate a first pre-distorted signal without amplitude

7 information; and

8   combining the phase pre-distortion term, the amplitude pre-distortion term, and the phase in a second

9 manner and modulating at the carrier frequency to generate a second pre-distorted signal without

10 amplitude information.

1   6. The invention of claim 5, wherein generating the phase and amplitude pre-distortion terms

2 comprise:

3   detecting amplitude of the input signal;

4   retrieving the phase pre-distortion term from a first look-up table based on the detected amplitude;

5   and

6   retrieving the amplitude pre-distortion term from a second look-up table based on the detected

7   amplitude.

1   7. The invention of claim 5, wherein:

2   in the first manner, the amplitude pre-distortion term is subtracted from the sum of the phase pre-

3   distortion term and the phase; and

4   in the second manner, the amplitude pre-distortion term is added to the sum of the phase pre-

5   distortion term and the phase.

1   8. The invention of claim 1, wherein combining the two amplified, pre-distorted signals is

2   implemented using a transformer.

1   9. The invention of claim 1, wherein combining the two amplified, pre-distorted signals is

2   implemented using a transmission line tee with transmission stubs for impedance matching.

1   10. The invention of claim 9, wherein the transmission stubs comprise shunt reactances place an

2   electrical equivalent of one-quarter wavelength away from the transmission line tee.

1   11. An amplifier circuit adapted to generate a linearized amplified output signal from an input signal

2   having amplitude information, the amplifier circuit comprising:

3   means for converting the input signal into two pre-distorted signals without amplitude information;

4   means for separately amplifying the two pre-distorted signals; and

5   means for combining the two amplified, pre-distorted signals to generate the linearized amplified

6   output signal.

1   12. An amplifier circuit adapted to generate a linearized amplified output signal from an input signal

2   having amplitude information, the amplifier circuit comprising:

3   circuitry adapted to convert the input signal into two pre-distorted signals without amplitude

4   information;

5   two amplifiers adapted to separately amplify the two pre-distorted signals; and

6   a combiner adapted to combine the two amplified, pre-distorted signals to generate the linearized

7   amplified output signal.

1   13. The invention of claim 12, wherein:

2   the input signal is an RF signal; and

3   the linearized amplified output signal is an RF signal having amplitude information.

1   14. The invention of claim 12, wherein the circuitry adapted to convert the input signal comprises:

2   a pre-distorter adapted to pre-distort the input signal to generate a pre-distorted input signal; and

3   a LINC modulator adapted to convert the pre-distorted input signal into the two pre-distorted signals

4   without amplitude information.

1   15. The invention of claim 14, wherein the pre-distorter is adapted to pre-distort both amplitude and

2   phase of the input signal.

1   16. The invention of claim 12, wherein the circuitry adapted to convert the input signal comprises:

2   circuitry adapted to generate a phase pre-distortion term from the input signal;

3   circuitry adapted to generate an amplitude pre-distortion term from the input signal;

4   a phase detector adapted to detect phase of the input signal;

5   circuitry adapted to combine the phase pre-distortion term, the amplitude pre-distortion term, and the

6   phase in a first manner and modulating at a carrier frequency to generate a first pre-distorted signal

7   without amplitude information; and

8   circuitry adapted to combine the phase pre-distortion term, the amplitude pre-distortion term, and the

9   phase in a second manner and modulating at the carrier frequency to generate a second pre-distorted

10   signal without amplitude information.

1   17. The invention of claim 16, wherein the circuitry adapted to generate the phase and amplitude pre-

2   distortion terms comprises:

3   an envelope detector adapted to detect amplitude of the input signal;

4   a first look-up table adapted to provide the phase pre-distortion term based on the detected amplitude;

5   and

6   a second look-up table adapted to provide the amplitude pre-distortion term based on the detected

7   amplitude.

1   18. The invention of claim 16, wherein:

2   the circuitry adapted to combine the phase pre-distortion term, the amplitude pre-distortion term, and

3   the phase in the first manner is adapted to generate a signal corresponding to the amplitude pre-distortion

4   term subtracted from the sum of the phase pre-distortion term and the phase ; and

5   the circuitry adapted to combine the phase pre-distortion term, the amplitude pre-distortion term, and

6   the phase in the second manner is adapted to generate a signal corresponding to the amplitude pre-

7   distortion term added to the sum of the phase pre-distortion term and the phase.

1   19. The invention of claim 18, wherein the circuitry adapted to generate the first and second pre-

2   distorted signals without amplitude information comprises:

3   a subtraction node adapted to subtract the amplitude pre-distortion term from the phase pre-distortion

4   term;

5   a first addition node adapted to add the amplitude pre-distortion term to the phase pre-distortion term;

6   a second addition node adapted to add the phase to the output from the subtraction node;

7   a first modulator adapted to modulate the output from the second addition node at the carrier

8   frequency to generate the first pre-distorted signal without amplitude information;

9   a third addition node adapted to add the phase to the output from the first addition node; and

10   a second modulator adapted to modulate the output from the third addition node at the carrier

11   frequency to generate the second pre-distorted signal without amplitude information.

1   20. The invention of claim 12, wherein the combiner comprises a transformer.

1   21. The invention of claim 12, wherein combiner comprises a transmission line tee with transmission

2   stubs for impedance matching.

1   22. The invention of claim 21, wherein the transmission stubs comprise shunt reactances place an

2   electrical equivalent of one-quarter wavelength away from the transmission line tee.